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# ORNITHOLOGISTS' ✻ AND ✻ OOLOGISTS'

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## Instructions for Collecting and Preserving Birds and Eggs.

BY PROF. J. A. SINGLEY, GIDDINGS, TEXAS.

### PART FIRST.

### BRIEF INSTRUCTIONS FOR COLLECTING AND PRESERVING BIRDS.' EGGS.

As many of the eggs sent me are poorly prepared and as this magazine may fall into the hands of some who are commencing a collection, I will give a few brief instructions as to the right way of preparing specimens. An experience of ten years (seven of them as a professional collector) will, I think, convince my readers that I am qualified to give instructions.

A few remarks as to the tools required, which can be bought from any dealer in Naturalists' supplies. Drills are the first requisite, and several sizes will be needed, from 2-32 of an inch for all fresh eggs, up to 1-4 inch for eggs in which incubation is advanced. Larger drills can be had; but who wants an egg with a half-inch hole in it? There are two kinds of drills, the so-called "fine-cut" drill, made to sell, and a toothed or burr drill, made for work. I have all the different makes and sizes of drills; but use altogether the 2-32, 4-32, 6-32 and 8-32 sizes of toothed drills. They last a long time; do not crack the egg and work fast.

Next after drills, the most necessary thing is a blow-pipe; different styles and sizes of these are also to be had, from the fine nickel ones with attachment to the common brass ones, straight or curved. Any of these will do, provided you do not insert the point of the pipe into the hole in the egg. The curved blow pipe is the most convenient. Glass ones are not to be thought of, from their liability to break. I have used a curved brass blow-pipe, six inches in length, for several years and it is still as good as new. The original cost, was, I think, 20 cts. and I've prepared about 1500 eggs with it. Other articles that are needed are an embryo hook and a small pair of scissors. With such an outfit, anyone can prepare eggs (the tools necessary for preserving birds will be given further on.)

Various ways are recommended for draining or drying the eggs after blowing, such as laying them, hole downward, on a bed of sand, cotton batting, blotting paper, etc. I'll tell you of the "dryer" that I use and how to make it. Take a piece of card-board of suitable size, (mine is 12-18 inches) draw lines across, lengthwise, 1-2 an inch apart: now draw another set of lines, the same distance apart and at right angles to the first lines. Where the lines intersect punch holes with a .32 calibre wad-cutter. Mount this perforated card-board on a wooden frame, stretching it tight, (a few strips of wood nailed to the frame under the card-board will keep it from sagging) tack sides to the frame, projecting about two inches above the card-board bottom, all round, and you have what appears to be a shallow box with a perforated bottom. The eggs are placed in this form, hole downward; and as the hole in the egg is thus placed in the hole that has been punched in the card-board, a free circulation of air is insured, all around and in the egg, drying it in the shortest time; and there will be no cotton, sand or anything else, sticking around the edges of the hole.

Having indicated the tools necessary, a few hints about the field-work part of collecting comes next; and here I wish to warn the young collector against being of a too greedy disposition and "bagging" everything he finds. Of many species he will find hundreds of eggs, (that is in a region where bird-life is plenty) and in cases of this kind he can take for his own collection as many eggs as desirable to show the variations, and a few for exchange. He can always have his choice here and take only fresh eggs, letting the others alone. I condemn the practice of taking only half the eggs in a nest and leaving the rest. Nine times out of ten the bird will desert the nest. Better take all out of one nest and pass the next one. The bird that has been despoiled of its eggs will go elsewhere and build again.

Identification and authentication are the cardinal requisites in collecting. A bird or a shell bears its own label; but the science of Oology has not advanced to that stage where a species can be determined from the egg alone. Never take an egg until you are sure what species it belongs to. An unidentified egg is worse than worthless: it is of no use to the owner, and it is that much bird-life needlessly destroyed. If you find a nest and don't know the bird, secure it, either by snaring or shooting and make a skin of it. Place the same number on the eggs and bird and they can then be identified at any time. Directions for making bird-skins will be given further on.

Supposing the collector starting out for a day's collecting: he will need a box filled with cotton, (a cigar box is excellent) a note-book and pencil (climbers such as are used by "telegraph men" also come in handy.)

If the collector takes to heart what I wrote above, he will carefully identify each set of eggs. Suppose the first set he takes is a set of four eggs of the Red-headed Woodpecker; the bird seen; nest 20 feet up in an elm tree. If he knows the bird's number, he would write in his note-book the following short particulars: 1—375—4—20 ft.—elm, and he would mark each egg of the set No. 1. The small end of the egg is preferably the place for these first numbers. The tenth set, he finds, is a set of three eggs of the Yellow-billed Cuckoo. The nest, eight feet up in a wild plum tree. Here his entries would read: 10—387—3—8 feet—wild plum. Each of the three eggs should be marked No. 10. By this method, the first number always representing the number of eggs in the set, mistakes are almost impossible. If he saw the bird he should write "seen" after the last item. If the bird was caught or shot, he can mention it instead of "seen." The last two items explain themselves, and all these items except the first, must enter into the data of the set. It is not necessary to give materials of nest, except in the case of rare species. I follow the above method of authenticating to save time; but the collector who has plenty of that commodity to spare, can of course write out full particulars of each set in the field. Never trust to memory in these matters; have it in black and white.

The collector, having returned home and being ready to prepare his eggs, let him take them out of his box where he has placed them well wrapped in cotton, as taken, and unwrapping them, place each set by itself on the "dryer" described elsewhere (he will now begin to appreciate that useful article) now getting his tools, not forgetting a glass of water to use in rinsing the eggs, he is ready to go to work.

The points of the drills, as bought, are always dull, and it is recommended to start the hole in the egg with a pin or needle. These useful articles are small, likely to get lost while working with, and make one more article to look after. You can dispense with them by carefully filing the point of your drillto a needle-like point. Select the least showy part of the egg, and holding it (the egg) in your left hand(the right if you are left-handed) put the point of the drill against the "least showy part," and twirl it (the drill) between the thumb and forefinger. Don't bear on the drill, as if you were drilling in iron, if you do you'll have a hole clear through both sides of the egg, something you don't want. The hole, being drilled until the largest circumference of the burr passes inside of the egg, don't try to pull it out, as a broken egg will be the result if you do. There is an internal pellicle lining the egg; if this is not cut out where the hole is drilled, it will interfere with blowing the egg. By bringing the burr of the drill up against this pellicle, as if you were going to remove it from the egg, and giving it the same twirling motion that you did when drilling, the pellicle will be cut all around the edges of the hole and the drill will come out. Now take your blow-pipe, and putting the point of it close to the hole, blow gently and the contents will come out. When incubation is more or less advanced, a larger hole must be drilled and the embryo removed with the hook and scissors, a tedious operation and not always successful, even with the greatest of care. Better let incubated eggs remain in the nest. A liitle experience will teach you how to differentiate fresh eggs from those that are too far advanced to save.

Never put the point of the blow-pipe inside of the egg, as a bursted egg will be the result, especially so, if your lungs are well developed. Having emptied the egg of its contents, the next step is to take a mouthful of water and inject it through the blow-pipe into the egg, rinsing it thoroughly. Large eggs should be filled half full of water and well shaken. Eggs treated in this manner are perfectly clean inside and offer no inducements to insects to harbor within, a thing they will surely do in eggs prepared in a slovenly manner. Having blown all the water out of the egg, take a soft cloth and wipe it dry, removing any foreign matter that may be adhering to it, taking care, however, not to rub off the number you put on it when collected and also notice that you do not rub off any of the markings on it. On some eggs the pigment is only loosely applied on the outside. Now place the egg hole downward, directly over one of the holes on your dryer and it will drain and dry in a few hours. Continue in the above way until you clean all your eggs, keeping each set to itself and adding another memorandum in your note-book opposite each set, as to the state of incubation of that set. When the eggs are dry fill out a data for each set. These particulars are taken from your note-book. Suppose he (the collector) takes the first set, that of the Red-headed Woodpecker. He will fill out a blank as follows:

No. 375. Name, Red-headed Woodpecker.
Collector, John Smith.
Locality, Boston, Mass.
Date, June 3d, 1887.
Set mark, 1-4.
Number of eggs in set, 4. Identity, bird seen.
Nest, excavated in an elm tree, 20 feet up; eggs laid on chips at bottom of cavity.

The collector will of course substitute his own name, locality and date for those given above, and if this should prove to be the second, third or fourth set of that species taken during the season, he would mark the set as 2-4, 3-4, 4-4 and so on.

He will mark every egg of that set 375 1-4, using a soft pencil, making legible figures, not too large, and putting them close to the hole in the egg. Never deface an egg by writing the date on it; the above is all that is admissible on a first-class specimen, and accompanied by the data is all that is necessary. If the collector reserves only one egg of the above set, sending out the others to correspondents in exchange, every egg sent out should be accompanied by a data, a copy of the original one made out for the set.

A few words now about forming a collection. Are you collecting hap-hazard, anything and everything, just so you can say that you have more eggs than the "other fellows?" If you do collect in this way, I'd advise you to quit at once. Do you collect, getting only the prettiest eggs, and having them under glass to look at? The Bower Birds of Australia build bowers and ornament them with pearly shells, bright colored feathers and other decorative material, and no doubt derives as much benefit from its collection as the collector who wants only the "prettiest" eggs. If you collect, however, to learn something from your collection, to make comparisons between the eggs of different species, to note the variations in eggs of the same species, to study the birds themselves in field, forest and closet; then I say, go ahead, collect in sets and in series of sets, always have your material for study well authenticated and your collection will always possess a scientific value as well as a pecuniary one, and you cannot be classed with the collectors who have been rather inelegantly termed "egg-hogs."

A few words about exchanging and I will close this article. Always use tin or wooden boxes in which to ship eggs. Cigar boxes need a cleat nailed inside on the ends to keep the lid from being broken in. Large boxes will also need a partition put in to strengthen the box and obviate packing too many eggs together. Roll each egg seperately in cotton and pack them so they will not shake about in the box, but not tight enough to crush them when the lid is put down. Don't put data or other writing in the box if it is to go by mail, and don't nail the lid down, simply tie it with a string. Use some current price-list as a basis of exchange, and send the data to your correspondent in your letter of advice. Don't wrap thread or tissue paper around eggs after you have wrapped them in cotton. Your correspondent will want to swear if you do, at least the writer hereof has been strongly tempted to do so, when unwinding yards of thread from the eggs, or undoing nicely done up packages, perhaps an invoice of an hundred eggs or more, and each one wrapped and tied like a package of dry goods or groceries. This practice of doing up eggs begets profanity and broken eggs.

## PART SECOND.

### BRIEF INSTRUCTIONS FOR COLLECTING AND PRESERVING BIRDS.

The tools necessary to put up a bird skin are neither numerous nor costly. A scalpel, scissors, two or three sizes of tweezers and a fish-hook with the barb broken off will suffice for all ordinary work—remember that it's not the tools but the one handling them that does the work. Cotton to fill out the skins with, corn meal or plaster to keep the feathers from being soiled, and arsenic to preserve the skins are essentials. Having the tools and supplies, the next thing necessary is the bird, and the collector will have to rely upon his gun to secure that. Ninety per ct. of the birds taken in routine collecting can be killed with dust-shot—larger shot generally mutilates a bird and it will make a sorry specimen. Experience will prove a better teacher than any written instructions and I will not attempt to give any, except to say that small birds can always be approached closely and it is not necessary to load heavily—"puff" loads, I call them, will do. My ordinary collecting load fills a 16 bore cartridge only about one-fourth full. A 16 bore gun is the right size for collecting. With cartridges properly loaded, such a gun will bring down anything from an eagle to a hummer.

Having shot your bird, the first thing necessary is to stop up the mouth with a fluff of cotton; sometimes it is necessary to plug the nostrils and vent with the same material. This will prevent any blood or the juices of the body from soiling the feathers. A "gob" of blood can generally be removed with the knife-blade—a little experience will teach you the best way. Some collectors plug up the shot-holes, but I simply part the feathers and lay a fluff of cotton directly on the wound. This will absorb any blood that escapes. If the eyeball is broken, letting out the contents, stick the knife-blade into the eye, take the tweezers and by catching hold of the cut edge of the eyeball; the entire eye can be torn from the socket, being careful not to allow any of the glairy fluid to get on the feathers. Dry out the socket with cotton, and insert a pellet of it to absorb any of the juices that may remain. If the nostrils are too small to plug up, a small roll of cotton laid across them and the ends tightly tucked into the mouth will prevent damage. Never try to wipe off blood from feathers—you can't do it and will only make matters worse. Having stopped all "leaks," make a paper cone or cylinder and drop your bird into it head-first, adjusting the wings and any unruly feathers. Make the cone or cylinder of such a size that the bird will fit closely, and have it of such a length that the end, or ends, can be pinched together, being careful not to bend or ruffle the tail feathers, and your bird will come out of its envelope nice and smooth even after a day's jaunt. A game-bag will do to carry the birds in, putting the heavier birds at the bottom and arranging all of them nicely in the bag.

Labelling is next in order, and is the most important part of the whole proceeding. Locality, date and sex are indispensable. The check-list number of the bird can be added, though not necessary. The collector's number is a requisite, as this refers to his register of specimens, giving full particulars of capture, etc. Length of bird and extent of wing find a place on the label, as also the scientific name of the bird—common name can also be given. Name of collector and contents of stomach are added by some collectors. By using abbreviations, all this can be put on the two sides of a medium sized label. Sex is denoted by the sign of Mars for male and Venus for female. L., length, Ex., extent, etc., etc. Labels with strings attached can be bought of any stationer.

We will now proceed to skin our bird. The first thing to be done is to take a measurement of the length, which is the distance between the tip of the bill and end of the longest tail feather. Lay the bird on its back on the table, the tip of the bill flush with a pencil mark. Take hold of the bill with the fingers or tweezers and with the disengaged hand take hold of both legs and pull, using force enough to get the curve out of the neck,(don't pull too hard) keep the bill flush with the pencil mark on the table, and mark where the end of the tail points. Measure this with a rule for the "length," giving dimensions in inches and hundredths of an inch. Distance between the tips of the outspread wings: place the bird on its back, head towards you, take hold of each wing at the bend and using moderate force stretch them to their full extent. Measure the distance between tips, and enter on your label as "extent." These two measurements can be taken only from the bird in the flesh. Length of wing, bill, feet, etc., etc., can be taken at any time from the dried specimen. Now make a paper cylinder the exact girth of your bird, securing it with a pin, this makes a good drying form. Lay the bird on its back (head to the left) and taking the scalpel (a sharp pocket-knife will answer) part the feathers along the middle line of the abdomen from the vent to the lower end of the breast-bone. A bare space will be seen and here the incision is to be made, cutting only through the skin, from the end of the breast-bone down to and into the vent. This latter makes a sort of button-hole termination to the cut, and it is not apt to be torn in manipulation. Now with the blade of your knife carefully separate the skin from the flesh along the line of the cut. Take hold of the cut skin with the fingers or tweezers and keep working carefully, lifting the skin from the flesh (no force or cutting is required) until you meet with an obstacle—this is the thigh. Lay down your knife and taking hold of the leg, push it up inside the skin, (easily done) and with the scissors sever bone and muscle at the knee joint. Skin down the leg which will come out of the skin, like a finger out of a glove, to the heel joint. Scrape all the flesh off the bone and draw the leg-bone into its sheath and leave it. Repeat the operation on the other side, and remember that all this time the feathers along the edges of the cut have an unhappy tendency to get into the opening you've made. This can be prevented by putting a little cotton between the raised skin and body of the bird, and all the time you are working keep the flesh covered with the meal or plaster—this absorbs the juices and keeps the feathers from getting soiled. Having skinned both legs and worked the skin loose down to the tail, the next step is seperating this from the body. All the tail feathers are inserted into what is popularly known as the "pope's nose." Set the bird upright on its breast on the table press the tail backwards, take the scissors and snipping away at the junction of the "pope's nose" and body until you sever the tail-stump from the body. Great care is required here, for if you through carelessness cut the skin, the cut will wander around and the first thing you know you have a tail-less bird skin. After the tail is severed from the body, use the back of your scalpel and separate the skin carefully from the rump (the adhesion between the skin and body is stronger here than at any other point.)

If you will now take your fishhook, attach a string to it, stick the hook into a firm part of the rump and hang the bird up where it will swing freely about the heighth of your breast, you will have both hands free to work with. Having hung your bird, work the skin away from the body, using the back of the scalpel blade or your finger nails for the purpose. NEVER pull a skin, as it will either tear or stretch so badly that all the after manipulations will fail to make a good specimen of it. Work down until you are stopped by the wings; and reccollect that as you work, the skin is being turned inside out. When the wings are reached, you must sever them close to the body(inside the skin of course)just as you did the leg. Seize the wing-stump with the fingers and work the skin down as you did on the body until you come to the secondaries. These feathers are grown to the arm-bone (ulna) and require loosening from the bone. They can be stripped down by using the thumb-nail, taking care to work the skin loose all round to prevent tearing. Having skinned to the bend of the wing, the "ulna" is stripped of all flesh and allowed to remain, all the other bones with muscles being removed. Do not skin beyond bend of the wing. If the "ulna" or leg bone has been broken by a shot, a piece of sharpened wire can be made to take their place—the wing requires this bone to hold it in position. Having skinned the wings, leaving them turned inside out, skin down towards the head, which is the easiest part of the job.

You now meet with the head and it will take patient work to skin over this. Always remember to push and not pull the skin, and presently you'll be rewarded by seeing the skin slip over the head to where it is pinned to the head by the ears. With the small tweezers detach the membrane that lines the ear opening. Do this for both ears. You have now come to the eyes. Work very carefully here. Cut the eye membranes from the bone, and inserting the point of the scalpel lift the eye from its socket entire. It's hard to give instructions how to do this and it must be learned by actual work. Take care not to open the eye-ball or lacerate the eye-lids. During all this time the skin must be supported in your left hand, (left-handed people will work the contrary way)and must not be allowed to hang as this would unduly stretch the neck and give you trouble. You will now separate the body from the skin, and to do this, cut down the base of the skull with the scalpel, severing completely body and neck from it. Scoop out the brain through the opening in base of skull and your skin is ready for poisoning.

If you have no drawer in your table to hold the arsenic, a large shallow cigar box or any other box of suitable size will answer. With a spoon or spatula apply the arsenic to every part of the skin, (inside) putting plenty in the brain cavity, eye-sockets, mouth and on the tail stump. Shake off all the surplus into the box, the moisture of the skin causing sufficient to adhere. Roll up two small pellets of cotton and fill the eye-sockets. You are now ready to turn the skin, and if you will remember how it was everted you will have no trouble in getting the head back. It requires a little dexterity to do this at first, but it doesn't take long to learn. Having turned the skin, pull the wings out and lay the skin on its back. Make a roll of cotton slightly smaller than the neck, put one end of this in the tweezers and work it gently up the neck until the empty brain box is reached. With the fingers of one hand hold the cotton in place,(the end in the brain cavity) and remove the tweezer and the neck is stuffed. Cross the wing-bones on the back,(some recommend tying them together) and make an artificial body of cotton, taking the natural body for a model, and work it carefully into the skin, keeping the end of the roll of cotton that you put in the neck in your left hand. When the body is in position, you can shorten the neck of the skin by pulling on the roll of cotton; or if you wish to lengthen the neck, a slight pull on the head will do it. Having the neck the proper length, tuck the cotton along the artificial body and bring the edges of the skin together. Arrange the eyelids and any feathers that may be awry, set the wings in position and slip the skin into the paper cylinder that you made before commencing the skinning. Having made your skin and written the label, the determination of sex comes next. Lay the bird on its side, (belly towards you) cut with the scissors from rump to the ribs, pushing the intestines aside and you will see the small of the back. Capping the kidneys you will see the testis, (if a male) "a pair of ellipsoidal bodies" generally of a dull whitish tint; if a female, the ovary, a white granular mass occupies the same position. Mark the sex on your label, cross the legs of the skin and loop the label on where they cross, and lay the skin away to dry.

The above instructions apply to nearly all birds; some Woodpeckers and Ducks cannot be skinned the usual way, the head being too large to pass through the neck skin. In such cases skin to the base of the skull, cut off the head inside the skin and turn the skin back to its natural position. Part the feathers in a straight line down the back of the skull and make an incision long enough to allow the head to pass through. After skinning, the head is put back and the cut sewed up, taking fine stitches—it's a tedious operation.

If blood or any other substance has dried on the feathers they can be washed out. Do this immediately after skinning and before filling out with cotton. Take a sponge and with luke-warm water wash out the stains. Put on plenty of plaster or meal to absorb the moisture, pressing it down and scraping off with the scalpel. As it gets dryer, raise the feathers, sprinkling on the absorbent. and blowing on them gently to dry thoroughly. Dried blood can often be removed by scraping with the thumb-nail, holding a finger opposite the thumb for resistance. A bird will remove blood with its bill.

A few words of caution are necessary. Recollect that arsenic is a DEADLY POISON and exercise the utmost care, for the sake of others as well as yourself. Do not bulge out the eyes of your specimen. Make it look as natural as possible. Cotton is a springy substance and if you put in too much, it will give your bird skin a dropsical appearance.

In forming a collection, the amateur should be satisfied with a pair, male and female, of each species; but where the plumage varies greatly with the seasons he may have specimens enough to show the variations. The professional Ornithologist needs large series of each species; but such is not the case with the amateur. Thoroughly work up the birds of your locality before doing much exchanging. You will be much surprised to see what a large number of species you can gather in a district, easily collected over on foot. After you've learned to make a skin do not prostitute your knowledge to the making of "millinery skins." That is a depth to which the true collector or Taxidermist never falls. If you cannot determine your specimens send them to the "Smithsonian," or to the New York Central Park Museum. I believe the Ornithologists in those institutions will always help a beginner out. These instructions conform to my ornithological *Alma Mater*, Dr. Coues' excellent "Field Ornithology." Where I depart from his instructions the method I've given suits me better than his. We're not all of a mind. Should the collector desire to mount his specimens he must get some good work on Taxidermy. This will give full instructions.

Trusting I've made things so plain that "he who runs may read," I am,

Ornithologically and Oologically yours,

J. A. SINGLEY.